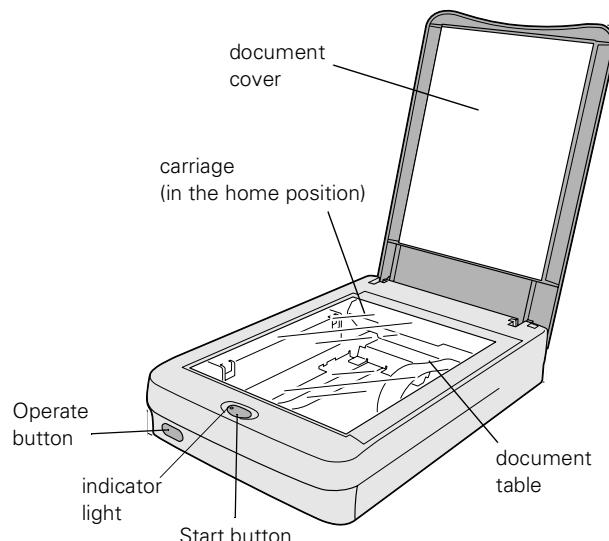
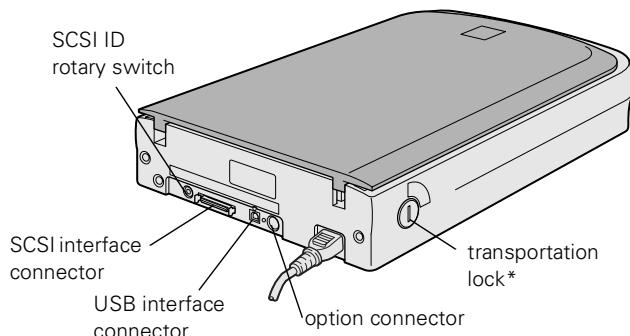


## Scanner Parts



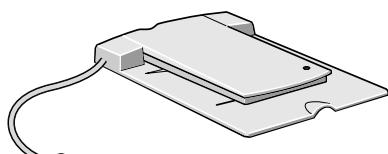
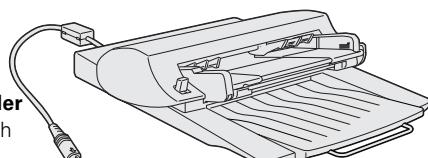
Front View



Back View

### Auto Document Feeder

(optional, included with EPSON Perfection 1640SU OFFICE)



### Transparency Unit

(optional, included with EPSON Perfection 1640SU PHOTO)

\* Before connecting the scanner to a power source, release the transportation lock (turn it down to the unlock position).

## Scanner Specifications

### Basic Specifications

|                              |   |
|------------------------------|---|
| Scanner type                 | Flatbed, color  |
| Photoelectric device         | Color matrix CCD  |
| Effective pixels             | 13600 × 18720 pixels at 1600 dpi,<br>100% scaling   |
| Maximum document size        | US letter or A4 size<br>(8.5 × 11.7 inches [216 × 297 mm])<br>Up to legal size if using the optional auto document feeder (the reading area can be specified from software) |
| Optical resolution           | 1600 dpi  |
| Maximum hardware resolution* | 1600 dpi (main scan) × 3200 dpi (sub scan)  |

\* The maximum hardware resolution of 1600 × 3200 dpi is achieved using EPSON's Micro Step Drive™ technology.

|                                 |  |
|---------------------------------|--|
| Maximum interpolated resolution | 12800 dpi  |
| Speed (1200 dpi, draft mode)    | Color and grayscale: 8.7 msec/line (approximate)<br>Line art: 3.0 msec/line (approximate)  |
| Output resolution               | 50 to 12800 dpi<br>(50 to 6400 dpi in 1 dpi increments, 12800 dpi and 9600 dpi, 12800 dpi and 9600 dpi performed with zoom function)   |
| Command level                   | ESC/I-B8   |
| Zoom                            | 50% to 200% in 1% increments   |
| Pixel depth                     | 14 bits per pixel  |
| Brightness                      | 7 levels   |
| Line art settings               | Fixed threshold<br>TET (Text Enhancement Technology, enable/disable selectable)  |
| Digital halftoning              | AAS (Auto Area Segmentation, enable/disable selectable)<br>3 halftoning modes (A, B, and C)<br>4 dither patterns (A, B, C, and D) for bi-level and quad-level data<br>2 user-defined dither patterns |
| Gamma correction                | 2 types for CRT display (A and B)<br>3 types for printer (A, B, and C)<br>1 type for user-defined  |

|                  |  |
|------------------|--|
| Color correction | 1 type for CRT display<br>3 types for printer output<br>1 type for user-defined          |
| Interface        | USB (Type B receptacle connector)<br>SCSI (High density 50-pin connector)                |
| Light source     | White cold cathode fluorescent lamp  |
| Reliability      | 30,000 cycles of carriage movements<br>(main unit MCBF)                                  |
| Dimensions       | Width: 11.4 inches (289 mm)<br>Depth: 17.4 inches (442 mm)<br>Height: 3.8 inches (96 mm) |
| Weight           | Approx. 9.9 lb (4.5 kg)  |

## Electrical

| Specification       | 100–120 V model                                 | 220–240 V model            |
|---------------------|---|----------------------------|
| Input voltage range | AC 100 to 120 V $\pm 10\%$                      | AC 220 to 240 V $\pm 10\%$ |
| Rated frequency     | 50 to 60 Hz                                     |                            |
| Input frequency     | 49.5 to 60.5 Hz                                 |                            |
| Rated current       | 0.5 A   | 0.3 A                      |
| Power consumption   | Approx. 25 W operating<br>Approx. 10 W stand by |                            |

Note: Check the label on the back of the scanner for voltage information.

## Environmental

|                                 |   |
|---------------------------------|---|
| Temperature                     | Operation: 41 to 95 °F (5 to 35 °C);<br>50 to 90 °F (10 to 32 °C) when using the auto document feeder<br>Storage: -13 to 140 °F (-25 to 60 °C)<br>-4 to 140 °F (-20 to 60 °C) with the auto document feeder |
| Humidity (without condensation) | Operation: 10% to 80%; 20% to 80% when using the auto document feeder<br>Storage: 10% to 85%  |
| Operating conditions            | Ordinary office or home conditions; avoid extreme dust, direct sunlight, and strong light sources. Make sure the outlet provides enough power.  |

## Safety Approvals

### 120 V model

|                  |   |
|------------------|---|
| Safety standards | UL 1950<br>CSA C22.2 No. 950<br>EMC FCC part 15 subpart B class B<br>CSA C108.8 class B |
|------------------|---|

### 230 V model

|                  |  |
|------------------|--|
| Safety standards | EN 60950<br>EMC EN 55022 (CISPR Pub 22) class B<br>AS/NZS 3548 class B |
|------------------|--|

### CE marking

|             |  |
|-------------|--|
| 230 V model | Low Voltage Directive 73/23/EEC<br>EN 60950<br>EMC Directive 89/336/EEC<br>EN 55022 Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 500-24 |
|-------------|--|

## USB Interface

|                |   |
|----------------|---|
| Interface type | Universal Serial Bus Specification Revision 1.1 |
|----------------|---|

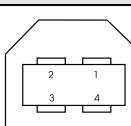
### Configuration

| Element           | Description   |
|-------------------|---|
| Configuration     | Characteristics: Self-powered<br>Remote wake up feature: Not supported<br>Maximum power consumption from VBUS: 2mA (5V) |
| Interface         | No alternate setting<br>Number of endpoints used by this interface (excluding endpoint 0): 2<br>Class: Vendor specific  |
| Endpoint 1        | Bulk IN transfer<br>Maximum data transfer size: 64 byte   |
| Endpoint 2        | Bulk OUT transfer<br>Maximum data transfer size: 64 byte  |
| String Descriptor | Language ID: US English<br>1: iManufacturer: "EPSON"<br>2: iProduct: "Perfection1640"                                   |

|                     |   |
|---------------------|---|
| Electrical standard | Full Speed mode (12Mbit/s) of Universal Serial Bus Specification Revision 1.1 |
|---------------------|---|

|                |                         |
|----------------|-------------------------|
| Connector type | One receptacle (Type B) |
|----------------|-------------------------|

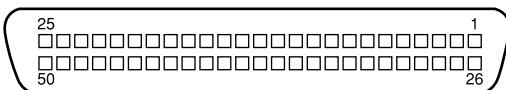
### Connector pin arrangement

| Pin number | Signal | Connector   |
|------------|--------|---|
| 1          | VCC    |   |
| 2          | -DATA  |   |
| 3          | +DATA  |   |
| 4          | GND    |  |

**Initialization methods** The scanner can be initialized (returned to a fixed set of conditions) in the following ways:

|                         |  |
|-------------------------|--|
| Hardware initialization | * The scanner is turned on.<br>* The USB cable is unplugged from the USB port on the scanner.                              |
| Software initialization | * Software sends the ESC @ (initialize the scanner) command.<br>* The scanner receives a Bus Reset from the USB interface. |

## SCSI Interface

|                           |  |
|---------------------------|--|
| Interface type            | ANSI X3T9.2/375R Revision 10L (SCSI-2)   |
| Functions                 | BUS FREE phase<br>ARBITRATION phase<br>SELECTION/RESELECTION phase<br>COMMAND phase<br>(the Logical Unit Number is fixed to 0 and the command link function is not supported)<br>DATA phase<br>Data in phase<br>Data out phase<br>STATUS phase<br>MESSAGE phase<br>MESSAGE IN phase<br>MESSAGE OUT phase<br>ATTENTION condition<br>RESET condition |
| Logic level               | TTL compatible   |
| Electrical standard       | ANSI X3T9.2/375R Revision 10L (SCSI-2)   |
| ID Setting                | Selectable from 0 to 7 (factory setting: 2)  |
| Terminator                | Internal terminator (always ON)  |
| Connector type            | High density 50-pin connector  |
| Connector pin arrangement |   |

**Initialization methods** The scanner can be initialized (returned to a fixed set of conditions) in the following ways:

|                         |   |
|-------------------------|---|
| Hardware initialization | * The scanner is turned on.<br>* The scanner receives a SCSI Reset signal from the SCSI interface.                |
| Software initialization | * Software sends the ESC @ (initialize the scanner) command.<br>* The scanner receives a SCSI Bus Device Message. |

## Transparency Unit Specifications

The transparency unit (B813172) allows you to scan positive and negative transparent materials—35 mm slides, filmstrips, and film up to 4 × 5 inches in size.



The transparency unit comes bundled with the EPSON Perfection 1640SU PHOTO.

## Basic Specifications

|                                 |  |
|---------------------------------|--|
| Dimensions                      | Width: 8.7 inches (222 mm)<br>Depth: 12.0 inches (305 mm)<br>Height: 1.4 inches (36 mm)  |
| Weight                          | 1.5 lb (0.7 kg)  |
| Maximum readable area           | 3.6 × 4.6 inches ([93 × 118 mm]<br>size of 4 × 5-inch film holder opening)   |
| Electrical                      | Supply voltage: DC 21.6 to 26.4 V<br>Rated current: 0.5 A  |
| Reliability                     | 10,000 hours for light source  |
| Temperature                     | Operation: 41 to 95 °F (5 to 35 °C)<br>Storage: -13 to 140 °F (-25 to 60 °C)   |
| Humidity (without condensation) | Operation: 10% to 80%<br>Storage: 10% to 85%   |
| Operating conditions            | Ordinary office or home conditions; avoid extreme dust, direct sunlight, and strong light sources.   |
| Document specifications         | Transparencies up to 4 × 5-inch film (negative film, positive film)<br>35 mm strip film (negative, positive)<br>35 mm slides (negative, positive)<br>Brownie size strip film |

## Auto Document Feeder Specifications

The auto document feeder (B813222) allows you to automatically load multi-page documents into your scanner. This document feeder is particularly useful for OCR (optical character recognition) scanning. You can load up to 30 legal size (8 1/2 × 14-inches) pages in the auto document feeder.



The auto document feeder comes bundled with the EPSON Perfection 1640SU OFFICE.

## Basic Specifications

|                                       |  |
|---------------------------------------|--|
| Dimensions                            | Width: 12.6 inches (319 mm)<br>Depth: 20 (508 mm)<br>Height: 5.4 inches (137 mm)                         |
| Weight                                | 4.9 lb (2.2 kg)  |
| Feeder type                           | Face up loading, face down ejecting  |
| Loading position                      | Left side of paper against left side of feeder   |
| Connector                             | 8-pin DIN male   |
| Temperature                           | Operation: 50 to 90 °F (10 to 32 °C)<br>Storage: -4 to 140 °F (-20 to 60 °C)                             |
| Humidity<br>(without<br>condensation) | Operation: 20% to 80%<br>Storage: 10% to 85%   |
| Operating<br>conditions               | Ordinary office or home conditions; avoid<br>extreme dust, direct sunlight, and strong<br>light sources. |
| Reliability                           | Load/eject: MCBF 20,000 sheets<br>Hinge: MCBF 12,000 cycles  |
| Electrical                            | Input voltage: DC 21.6 to 26.4 V<br>DC 4.75 to 5.25 V<br>Input current: 24 V: 0.8 A<br>5 V: 0.2 A        |

## ADF Document Specifications

|                 |   |
|-----------------|---|
| Feeder capacity | 30 sheets of maximum weight 55 gm<br>paper, total thickness less than 0.24 inch<br>(6 mm) |
| Size            | Width: 3.3 to 8.5 inches (85 to 216 mm)<br>Length: 5 to 14 inches (127 to 356 mm)         |
| Thickness       | 0.0028 to 0.0063 inch (0.07 to 0.16 mm)   |
| Paper quality   | High-quality paper, bond paper, check<br>paper, recycled paper                            |
| Document type   | Documents printed with impact printers,<br>laser printers, or fax machines                |



Don't use the following paper types: transparencies,  
film, coated paper, labels, carbon paper, or paper with  
staples, holes, rips, curls, or folds.

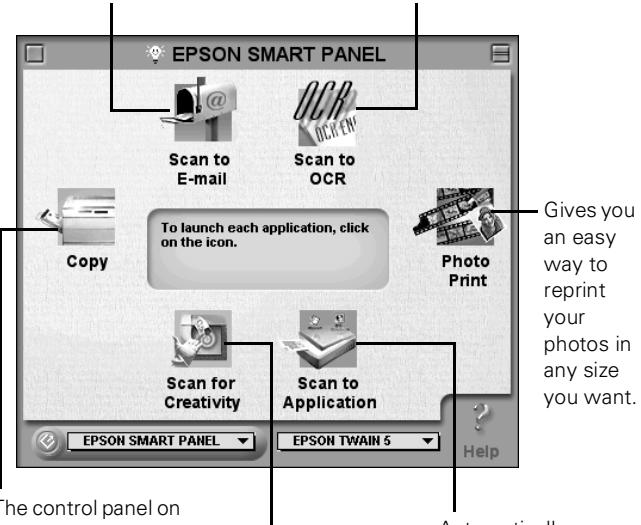
## Using EPSON Smart Panel

Follow these steps to use EPSON Smart Panel to scan your document or photo:

1. Place your original document(s) face down on the document table.
2. Do one of the following to open the Smart Panel:
  - Click the  Smart Panel icon on the Windows taskbar.
  - Open the Apple menu and select EPSON SMART PANEL.

If you have a modem and e-mail service, you can use your scanner to send photos or documents.

Optical character recognition (OCR) converts a scanned text image into text that you can edit in a word processing format.



The control panel on your computer screen allows you to make copies of printed pages and photos.

Automatically scans your image and then opens it in PhotoDeluxe, which guides you through steps to create a print project—such as a calendar, card, label, or web page.

Automatically scans your image and then opens it in any supported application program on your computer.

3. Click the icon for your desired scanning option. The window for that option appears and lets you adjust settings for your scan. Follow the on-screen steps for each option.

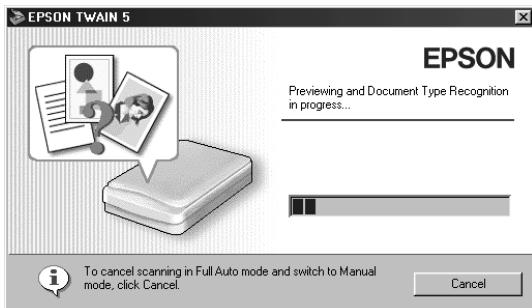


If you select Copy or Photo Print, make sure your printer is turned on and the correct paper type and size is loaded in your printer. You can use Photo Print only with an EPSON Stylus® Color or EPSON Stylus Photo printer.

For detailed instructions on using each of the Smart Panel options, read your electronic manual for EPSON Smart Panel.

## Using EPSON TWAIN

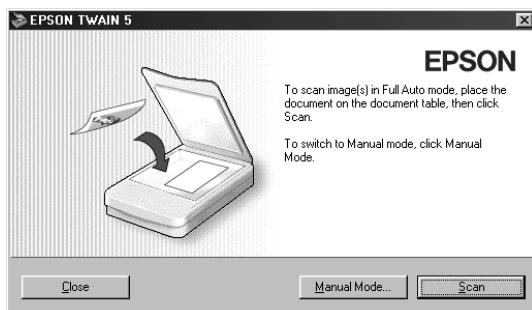
The first time you start EPSON TWAIN, you see the Automatic Scanning window.



If you want, you can let the TWAIN driver automatically scan your document. It detects what type of document you're scanning and automatically chooses the optimum settings for your scan.

To scan in manual mode and adjust your scan settings, click Cancel.

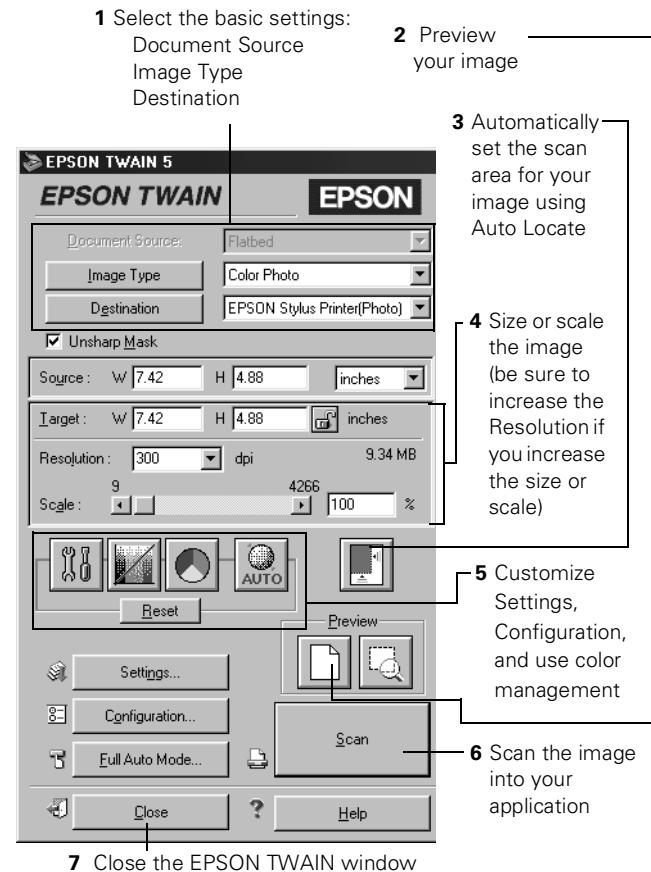
You see the following window:



Click Manual Mode to open the EPSON TWAIN 5 window:



The illustration below shows settings you can adjust in EPSON TWAIN, and the preferred order to adjust them in.



The following settings are recommended for optimal scans:

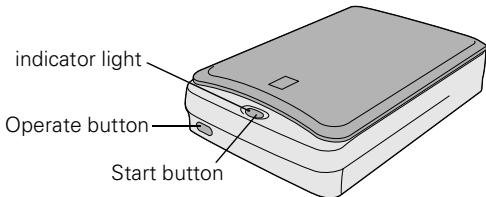
| Image type                        | Recommended Image Type    | Scanning resolution for printing <sup>1, 2</sup> |
|-----------------------------------|---------------------------|--|
| Photograph                        | Color Photo               | 300 dpi  |
| Small photograph to be enlarged   | Color Photo               | 300 dpi to 3200 dpi                              |
| Magazine                          | Color Photo               | 300 dpi  |
| Newspaper (text only)             | Text (Background Removal) | 400 dpi  |
| Text for OCR                      | Text (Background Removal) | 400 dpi  |
| Text with images                  | Color Document            | 400 dpi  |
| Line art                          | Line Art                  | 300 to 3200 dpi                                  |
| 35 mm film (negative)             | TPU for neg. Film         | 300 to 3200 dpi                                  |
| 4 x 5 or Brownie film (negative)  | TPU for neg. Film         | 300 to 3200 dpi                                  |
| 35 mm slide or 4 x 5 transparency | TPU for pos. Film         | 300 to 3200 dpi                                  |

- If your final file is for on-screen viewing (for example, on a web page or in an e-mail message), select 72 dpi for your resolution.
- When enlarging an image, manually increase the resolution (dpi) proportionally to maintain the resolution of your original.

## Light and Buttons

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The scanner has one indicator light and two buttons. Light status and button functions are described in the tables below.



Scanner buttons

| Button  | Function   |
|---------|--|
| Operate | Turns the scanner on and off.                            |
| Start   | Lets you scan directly to an application with one touch. |

Scanner indicator light

| Light    | Color | Status   |
|----------|-------|--|
| Flashing | Green | The scanner is initializing or busy scanning.  |
| On       | Green | The scanner is ready to scan images.   |
| Flashing | Red   | The scanner may not be properly connected to the computer. Check the cable connection. Then turn the scanner off and back on to reset it. Make sure the scanner is unlocked. Turn off the scanner, unlock the transportation lock, then turn the scanner on. |
| Off      | —     | The scanner is turned off.   |

## Scanner Models

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The scanner is available in three different models.

### EPSON Perfection 1640SU includes:

- EPSON Perfection 1640SU scanner
- USB cable
- 3 CD-ROMs (Windows® and Macintosh™) that include: EPSON TWAIN Driver, EPSON Smart Panel,™ EPSON Software™ Film Factory™ Lite, ScanSoft® TextBridge® Pro, ArcSoft™ PhotoPrinter™ 2000 Pro, ArcSoft Panorama Maker™ 2000, ArcSoft PhotoMontage™ 2000, Electronic manuals (pdf and HTML), Adobe® Photoshop® 5.0 LE (on separate CD-ROM), Adobe PhotoDeluxe® (on separate CD-ROM)
- Scanner Basics* guide

### EPSON Perfection 1640SU PHOTO includes:

- EPSON Perfection 1640SU scanner
- Transparency unit and film holders
- USB cable
- 3 CD-ROMs (Windows and Macintosh) that include: EPSON TWAIN Driver, EPSON Smart Panel, EPSON Software Film Factory Lite, ScanSoft TextBridge Pro, ArcSoft PhotoPrinter 2000 Pro, ArcSoft Panorama Maker 2000, ArcSoft PhotoMontage 2000, Electronic manuals (pdf and HTML), Adobe Photoshop 5.0 LE (on separate CD-ROM), Adobe PhotoDeluxe (on separate CD-ROM)

- Scanner Basics* guide

### EPSON Perfection 1640SU OFFICE includes:

- EPSON Perfection 1640SU scanner (does not include document cover)
- Auto document feeder (with paper support, document mat, and spare paper path guide)
- USB cable
- 2 CD-ROMs (Windows and Macintosh) that include: EPSON TWAIN Driver, EPSON Smart Panel, EPSON Software Film Factory Lite, ScanSoft TextBridge Pro, ArcSoft PhotoPrinter 2000 Pro, ArcSoft Panorama Maker 2000, ArcSoft PhotoMontage 2000, Electronic manuals (pdf and HTML), Adobe PhotoDeluxe (on separate CD-ROM)
- Scanner Basics* guide

## Related Documentation

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|              |  |
|--------------|--|
| CPD-10858    | EPSON Perfection 1640SU <i>Scanner Basics Reference Guide</i> (HTML)<br><i>EPSON Smart Panel User's Manual</i> (pdf) |
| TM-PERF1640  | EPSON Perfection 1640SU Service Manual   |
| PL-PERF1640  | EPSON Perfection 1640SU Parts List   |
| PL-PERF1640P | EPSON Perfection 1640SU PHOTO Parts List   |
| PL-PERF1640O | EPSON Perfection 1640SU OFFICE Parts List  |
| PL-B813172   | Parts List for optional Transparency Unit  |
| PL-B813222   | Parts List for optional Auto Document Feeder   |